Notice of Allowability	Application No.	Applicant(s)
	10/805,841	DUERK ET AL.
	Examiner	Art Unit
	Tiffany A. Fetzner	2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *05/04/2005; 07/11/2005; & 07/21/2005*.

2. ☒ The allowed claim(s) is/are *1-26*.

3. ☐ The drawings filed on _____ are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☒ hereto or 2) ☒ to Paper No./Mail Date *07/22/2005*.
   (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 07/22/2005.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 07/11/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *07/22/2005* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with **Attorney Scott M. Oldham Reg. No. 32,712** on July 20th and 21st 2005 along with authorization to charge any necessary fees to applicant's deposit account.

3. The application has been amended as follows:

In the Claims

A) Replace claim 1 of the May 4th 2005 amendment and response with the following **Examiner amended claim 1**:

Claim 1 --- A method of chemical species suppression for MRI imaging of a scanned object region comprising:

acquiring K space data using a spiral acquisition technique for at least a first TE and at least a second TE which is different, for purposes of performing at least two-point Dixon processing;

reconstructing at least two sets of image data having off resonance effects;

estimating the off resonance effects at locations throughout the at least two reconstructed sets of image data;

decomposing said at least two sets of reconstructed image data into at least first and second chemical species image data sets each representing a separate chemical species; and

correcting said at least first and second chemical species image data sets for blurring resulting from off resonance effects due to Bo inhomogeneity using said estimated off resonance effects, wherein each of the at least two corrected chemical species image data sets suppresses signals from other chemical species. ---

B) **Replace claim 2** of the May 4th 2005 amendment and response with the following **Examiner amended claim 2**:

Claim 2 --- The method defined in **claim 1** wherein the step of acquiring K space data at the first TE and the second TE comprises acquiring signal components from **the** first and second chemical species. ---

C) **Replace claim 3** of the May 4th 2005 amendment and response with the following **Examiner amended claim 3**:

Claim 3 --- The method defined in **claim 1** further comprising acquiring K space data at a third TE, **which is different from said first and second TE**. ---

D) **Replace claim 4** of the May 4th 2005 amendment and response with the following **Examiner amended claim 4**:

Claim 4 --- The method defined in **claim 3** wherein the step of acquiring K space data at the third TE comprises acquiring signal components from **the** first and second chemical species. ---

E) **Replace claim 5** of the May 4th 2005 amendment and response with the following **Examiner amended claim 5**:

Claim 5 --- The method defined in claim 1 wherein the step of estimating the off resonance effects comprises generating an estimated frequency field map. ---

F) **Replace claim 6** of the May 4th 2005 amendment and response with the following **Examiner amended claim 6**:

Claim 6 --- The method defined in claim 5 wherein the step of generating an estimated **frequency** field map comprises:

a. estimating the off resonance effects for a first location comprising:

i. providing a frequency,

ii. estimating signal components for first and second chemical species at the provided frequency,

iii. calculating an estimated signal of the first and second chemical species at the provided frequency,

iv. calculating the difference between the estimated and acquired signal at the provided frequency, and

v. repeating steps i.-iv. for different frequencies to find the frequency that minimizes the difference for the first location; and

b. repeating steps i.-v. for other locations in the estimated **frequency** field map. -

G) **Replace claim 7** of the May 4th 2005 amendment and response with the following **Examiner amended claim 7**:

Claim 7 --- The method defined in **claim 6** further comprising using region growing to create **the estimated** frequency field map for the scanned object---

H) **Replace claim 8** of the May 4th 2005 amendment and response with the following **Examiner amended claim 8**:

Claim 8 --- The method defined in **claim 7** further comprising determining a frequency determined region as the value of f_j that minimizes D_{local} where D_{local} takes the single minimum in the D_{local} - f_j plot. ---

I) **Replace claim 9** of the May 4th 2005 amendment and response with the following **Examiner amended claim 9**:

Claim 9 --- The method defined in **claim 7** further comprising expanding the frequency determined region so that the **estimated** frequency field map can be created for the scanned object region.. ---

J) **Replace claim 10** of the May 4th 2005 amendment and response with the following **Examiner amended claim 10**:

Claim 10 --- The method defined in **claim 9** further comprising finding the correct frequency f_j at each pixel in a 'frequency to-be-determined region', which abuts the 'frequency determined' region. ---

K) **Replace claim 11** of the May 4th 2005 amendment and response with the following **Examiner amended claim 11**:

Claim 11 --- The method defined in **claim 10** wherein the step of finding the correct frequency f_j comprises choosing the value of f_j at each pixel that borders the frequency determined region which creates a local minima in the (D_{local} - f_j) plot, and is the closest to **an** average local frequency of the neighboring pixels in the frequency determined region. ---

L) **Replace claim 12** of the May 4th 2005 amendment and response with the following **Examiner amended claim 12**:

Claim 12 --- The method defined in **claim 5** wherein the step of generating an estimated **frequency** field map comprises:

a. estimating the off resonance effects for a first location comprising:

i. providing a frequency,

ii. estimating signal components for **the** first and second chemical species at the provided frequency,

iii. determining whether the signal components have the same or opposite phases at the provided frequency, and

iv. repeating i.-iii. for another frequency if the signal components do not have the same or opposite phases; and

b. repeating steps i.-iv. for other locations in the estimated **frequency** field map.---

M) **Replace claim 13** of the May 4th 2005 amendment and response with the following **Examiner amended claim 13**:

Claim 13 --- The method defined in **claim 1 wherein** an off resonance correction method **is used** to eliminate the effects of local $\mathbf{B_o}$ inhomogeneity on the first chemical species **image data set**. ---

N) **Replace claim 14** of the May 4th 2005 amendment and response with the following **Examiner amended claim 14**:

Claim 14 --- The method defined in **claim 1 wherein** an off resonance correction method **is used** to eliminate the effects of local $\mathbf{B_o}$ inhomogeneity on the second chemical species **image data set**. ---

O) **Replace claim 15** of the May 4th 2005 amendment and response with the following **Examiner amended claim 15**:

Claim 15 --- The method defined in **claim 1 wherein** an off resonance correction method to eliminate the effects of local $\mathbf{B_o}$ inhomogeneity **is used** on the first chemical species and the second chemical species **image data sets**. ---

P) **Replace claim 16** of the May 4th 2005 amendment and response with the following **Examiner amended claim 16**:

Claim 16 --- The method defined in **claim 5 wherein** the first and second chemical species **image data sets are corrected** based on the frequencies indicated in the **estimated** frequency field map at each pixel location having blurring due to the off resonance effects of local $\mathbf{B_o}$ inhomogeneity. ---

Q) **Replace claim 17** of the May 4th 2005 amendment and response with the following **Examiner amended claim 17**:

Claim 17--- The method defined in **claim 1** wherein the first chemical species is water and the second chemical species is fat. ---

R) **Replace claim 18** of the May 4th 2005 amendment and response with the following **Examiner amended claim 18**:

Claim 18 --- The method defined in **claim 16 wherein said correcting comprises** demodulating the first and second chemical species image **data sets** with demodulation

frequencies f_1 and $f_1 + f_s$ to create locally deblurred image **data** sets of the first and second chemical species respectively. ---

S) **Replace claim 19** of the May 4th 2005 amendment and response with the following **Examiner amended claim 19**:

Claim 19 --- The method defined in **claim 18 wherein said correcting comprises** reconstructing the entirely deblurred first chemical species image **data set** by combining the deblurred regions of the first chemical species image **data set** from each local frequency, f_1, in the **estimated** frequency field map. ---

T) **Replace claim 20** of the May 4th 2005 amendment and response with the following **Examiner amended claim 20**:

Claim 20 --- The method defined in **claim 18 wherein said correcting comprises** reconstructing the entirely deblurred second chemical species image **data set** by combining the deblurred regions of **the** second chemical species image **data set** from each local frequency, f_s, in the frequency field map. ---

U) **Replace claim 21** of the May 4th 2005 amendment and response with the following **Examiner amended claim 21**:

Claim 21 --- The method defined in **claim 1** further comprising using more than one coil for obtaining the data sets using a weighted average from signals of each coil when **a** minimum local difference between acquired signals and estimated signals is $D_{pixel} = |S_0 - (W'_j + F'_j)| + |S_1 - (W'_j + F'_j \exp(i\varphi f_s))\exp(i\varphi_j)| + |S_2 - (W'_j + F'_j \exp(i2\varphi f_s))\exp(i2\varphi_j)|$. ---

V) **Replace claim 22** of the May 4th 2005 amendment and response with the following **Examiner amended claim 22**:

Claim 22 --- The method defined in **claim 1** further comprising acquiring a plurality of interleaves, wherein each interleave uses a different TE and the sampling density of each interleave is sufficient to create a low resolution image **data set**. ---

W) **Replace claim 23** of the May 4th 2005 amendment and response with the following **Examiner amended claim 23**:

Claim 23 --- The method defined in **claim 22** wherein the sampling density of each component sufficiently over-samples k space to create a **low-resolution** image **data set** of the object at that TE. ---

X) **Replace claim 24** of the May 4th 2005 amendment and response with the following **Examiner amended claim 24**:

Claim 24 --- A method to separate fat and water signals in MRI imaging of a scanned object region, said method comprising:

acquiring at least two sets of K-space data **via spiral scanning before image reconstruction, wherein each said set of K-space data is acquired using a different TE from that of any other said set of K-space data, for purposes of performing at least two-point Dixon processing**;

generating a frequency field map from said at least two sets of K-space data;

performing water-fat decomposition using said at least two sets of K-space data to reconstruct a blurred water image and a blurred fat image; and

applying said frequency field map to said blurred water image and said blurred fat image to form a deblurred water image and a deblurred fat image. ---

Y) Add New claim 25, which is considered to be free of new matter, via this **Examiner's Amendment** as follows:

Claim 25 --- The method of **claim 1** wherein said step of correcting is performed as an integral part of said decomposing step. ---

Z) Add New claim 26, which is considered to be free of new matter, via this **Examiner's Amendment** as follows:

Claim 26 --- The method of **claim 1** wherein said step of correcting is performed separately from said step of decomposing. ---

In the Specification

AA) Replace specification paragraph **[0018]** of the **May 4th 2005** amendment and response with the following amended paragraph:

--- The long readout time of spiral trajectories leads to off-resonance signals that blur into neighboring pixels; spins from multiple off-resonance frequencies can all contribute to the voxel signal. However, it can generally be assumed that Bo inhomogeneity is smoothly varying across the FOV (this assumption will be referred to as 'assumption(i)'). Thus, the average off-resonance frequency in any pixel is usually close to the true local Bo field strength. This concept is exploited in the conventional method to create an off-resonance frequency map in spiral imaging, in which the phase difference is taken between two images (with different TE's) even though both images are already blurred by off-resonance effects. ---

BB) After the title of the **original** specification **insert** the following headings and paragraphs:

--- Cross Reference to Priority Application

This application (US patent application serial number 10/805,841 filed on March 22nd 2004, and published on January 27th 2005 as US Patent Application Publication 2005/0017717 A1; which corresponds to International application number PCT/US2004/008636 with an International Publication number of WO 2004/086060 A2 published on October 7th 2004) and its associated US and international publications claim(s) priority to US provisional serial number 60/456,333 filed March 20th 2003, which is incorporated herein by reference in its entirety.

Cross Reference to Related Co-pending Application / Publication

This application is related to later-filed copending US patent application 10/832,659 filed on April 26th 2004, published on February 10th 2005 as US Patent Application Publication 2005/033153 A1, which corresponds to International application number PCT/US2004/012858 with an International Publication number of WO 2004/097387 A2 published on November 11th 2004; the related US application 10/832,659, its publication as US 2005/033153 A1, and the international publication of WO 2004/097387 A2 have priority drawn from the US provisional application number of 60/465,551 filed on April 25th 2003. These applications / publications have the same inventive entity as the current application and correspond to one another. ---

CC) Replace specification paragraph **[0045]** on **page 11** of the **original specification** with the following amended paragraph:

--- Ideally, only one acquisition would be needed for fat/water decomposition. An efficient spiral off-resonance correction method with only one acquisition has been proposed by **Nayak et al**. This method is called 'off-resonance correction using variable density spirals (ORC-VDS)'. In this method, odd- and even-numbered spiral interleaves have slightly different TE's and the central portion of k-space is over-sampled using variable density spiral trajectories. A B_0 inhomogeneity field map can be calculated by taking the phase difference between the two low-resolution images reconstructed from the data of odd- and even-numbered spiral interleaves. ---

DD) Replace specification paragraph **[0046]** on **page 11** of the **original specification** with the following amended paragraph:

--- The extensions of this method to the spiral 3PD and 2PD techniques of the present invention, with reference to Figure 6, shows the spiral trajectories that over sample the inner regions of k-space with three times (a) and twice (b) higher sampling densities than the outer parts. ---

The following is an examiner's statement of **Reasons for Allowance**:

4. With respect to **examiner amended independent claims 1** and **dependent claims 2-23, 25, 26**. These claims are allowable over the prior art of record because the prior art of record does not disclose or suggest an MRI method comprising "A method of **chemical species suppression for MRI imaging** of a scanned object region comprising **acquiring K space data using a *spiral acquisition technique* for at least a first TE and at least a second TE which is different, for purposes of *performing at least two-point Dixon processing***; reconstructing at least two sets of image data having off resonance effects; estimating the off resonance effects at locations throughout the at least two reconstructed sets of image data; decomposing said at least two sets of reconstructed image data into at least first and second chemical species

image data sets each representing a separate chemical species; and **correcting said at least first and second chemical species image data sets for blurring resulting from off resonance effects due to Bo inhomogeneity using said estimated off resonance effects**, wherein **each of the at least two corrected chemical species image data sets suppresses signals from other chemical** species." It is the combination of the claim limitations taken as a whole that constitutes both the novelty and non-obviousness of applicant's claims.

5. With respect to **examiner amended independent claim 24** This claim is considered by the examiner to be allowable over the prior art of record because the prior art of record does not disclose or suggest an MRI method comprising "**A method to separate fat and water signals in MRI imaging** of a scanned object region, said method comprising: **acquiring at least two sets of K-space data via spiral scanning before image reconstruction, wherein each said set of K-space data is acquired using a different TE from that of any other said set of K-space data, for purposes of performing at least two-point Dixon processing**; **generating a frequency field map from said at least two sets of K-space data**; performing water-fat decomposition using said at least two sets of K-space data to reconstruct a blurred water image and a blurred fat image; and **applying said frequency field map to said blurred water image and said blurred fat image to form a deblurred water image and a deblurred fat image**." It is the combination of the claim limitations taken as a whole that constitutes both the novelty and non-obviousness in applicant's claim.

6. The examiner notes specifically that it is the use of the spiral data acquisition with different TE times for at least two point Dixon processing (i.e. spiral acquisition with 2PD or 3PD) which are applied to chemical species suppression for correcting **off resonance effects due to Bo inhomogeneity** in resulting image data sets; as opposed to the **prior art methods** of linearly processing spirally acquired data, or the conventional prior art one-point Dixon, two-point Dixon, or three-point Dixon processing techniques which are acquired in a non-spiral manner, that is the main feature of novelty in applicant's examiner amended independent claims. The **prior art of record** fail to teach or suggest that spiral data acquisition of k-space is useful for at least two-

point Dixon processing, chemical species suppression, or that this spiral Dixon acquisition applied to and for chemical species suppression **corrects blurring off resonance effects due to Bo inhomogeneity** in reconstructed image data sets. The prior art or record fails to combine the features of spiral data acquisition, with at least two-point Dixon Processing. Heretofore, Dixon methods were applied to non-spiral, normally linear data; while spiral data collection was applied to other non-Dixon, or one-point Dixon techniques. The blurring of the off-resonance effects was taught in the prior art to be to great, for useful information to be acquired with conventional spiral acquisition. The non-obviousness of applicant's invention is that applicant has found a manner in which MRI spiral imaging for at least two-point Dixon Processing overcomes and corrects for **off resonance effects due to Bo inhomogeneity** in resulting image data sets, which was unknown prior to applicant's invention,

7. With respect to **examiner-amended claims 2-23** and **25-26** specifically, these claims are allowable over the prior art of record because they each depend from an allowable **examiner amended independent claim**.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner's Comment

Drawings

9. **A complete set of Corrected Formal drawings** are now required in this application because the official draftsperson has objected to the Formal drawing corrections submitted on May 4th 2005. [See the attached PTO 948 form of the Official Draftsperson's Review].

10. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Original Specification Support for Examiner Amendments to the Claims

11. Support for the examiner amended "decomposing" step of claim 1 can be found in at least **original** paragraph [0031] of the specification as originally filed where W' and F' are the decomposed data sets (i.e., blurred water and fat image data sets...two chemical species of water and fat) formed from the reconstruction data sets So, S1, and S2 which were formed as described in at least **original** paragraph [0028] of the specification. So, S1, and S2 are the at least two sets of image data having off resonance effects. **Original** paragraphs [0029] and [0030] of the specification describe estimating the off-resonance effects. Finally, at least **original** paragraph [0032] describes performing the correction or deblurring on W' and F' to form W and F which are the decomposed / deblurred image data sets of water and fat (i.e., two chemical species).

12. Support for the spiral acquisition with at least two point Dixon processing can be found throughout the original disclosure. The application is considered to be free of new matter by the examiner. No new matter was added by the examiner amendments above.

Prior art of record

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) **Zhang** US patent 6,459,922 B1 issued October 1st 2002 filed March 30th 1999. [The entire reference is relevant to applicant's claims]..

B) **Kwok et al.,** article: "Interleaved Water and Fat Dual-Echo Spin Echo Imaging with Intrinsic Chemical-Shift Elimination", Journal of Magnetic Resonance Imaging 13: 318-323 (2001).

C) **Kwok et al.,** US patent 6,583,623 B1 issued June 24th 2003, filed March 30th 2001, which corresponds to the **Kwok et al.,** article.

D) **Zhang et al.,** US patent application publication 2003/0060697 A1 published March 27th 2003, filed August 10th 2001.

E) **Zhang et al.,** US patent 6,603,990 B2 issued August 5th 2003, filed August 10th 2001 which corresponds to US patent application publication 2003/0060697 A1 published March 27th 2003, filed August 10th 2001.

F) **Ma** US patent 6,016,057 issued January 18th 2000.

G) **Meyer et al.,** US patent 6,020,739 issued February 1st 2000.

H) **Pauly** US patent 5,270,653 issued December 14th 1993.

I) **Heid** US patent 6,486,670 B2 issued November 26th 2002, filed April 2nd 2001.

J) **Heid** US patent application publication 2001/0026157 A1 published October 4th 2001, filed April 2nd 2001.

K) **Durek et al.,** US patent application publication 2005/0017717 A1 published Jan. 27th 2005, which is the corresponding publication of applicant's instant application, and although not prior art this reference is noted for the purposes of a complete record.

L) **Zhang et al.**, US patent 6,263,228 B1 issued July 17th 2001.

M) **Tsai et al.,** US patent 6,215,306 B1 issued April 10th 2001.

N) **Pauly et al.**, US patent 5,402,067 issued March 28th 1995.

O) **Chen et al.**, US patent 6,084,408 issued July 4th 2000.

P) **Moriguchi et al.,** International publication **WO 2004/086060 A2** published October 7th 2004, in English with an effective US provisional 60/456,333 priority date of March 20th 2003 which is the corresponding international publication of applicant's instant application, and although not prior art, this reference is noted for the purposes of a complete record.

Q) **Moriguchi et al.,** International publication **WO 2004/097387 A2** published November 11th 2004, in English with an effective US provisional 60/465,551 priority date of April 25th 2003 which is the corresponding international publication of **Moriguchi et al., US 2005/0033153 A1** This reference is not available as prior art because it was filed after applicant's instant application, and has the same inventive entity as the instant application. The reference is noted because it is a related application and although not prior art, this reference is noted for the purposes of a complete record.

R) **Moriguchi et al.,** US patent application publication 2005/0033153 A1 published Feb. 10th 2005, filed April 26th 2004, with a US provisional date of April 25th 2003. This

reference is not available as prior art because it was filed after applicant's instant application, and has the same inventive entity as the instant application. The reference is noted because it is a related application and although not prior art, this reference is noted for the purposes of a complete record.

S) **Nayak K. S. et al**: article "Efficient off-resonance correction for spiral imaging" (Magnetic Resonance in Medicine Wiley USA, vol 45, no. 3, 2001 , pages 521-524).

T) **Noll** D. C. Et Al: article "Deblurring for Non-2D Fourier Transform Magnetic Resonance Imaging" 1-2, 5,6, 8-20 (Magnetic Resonance in Medicine 25, (1992).

U) **King K.F. et al.,** article "Concomitant gradient field effects in spiral scans" Magnetic Resonance in Medicine: Official Journal of the Society of Magnetic Resonance in Medicine/society of Magnetic Resonance in Medicine. Jan 1999. vol. 41, no 1. Pages 103-112.

V) **Irarrazabal P. et al.**, article "Inhomogeneity Correction Using An Estimated Linear Field Map" Magnetic Resonance in Medicine, Academic Press, Duluth, MN, US, vol. 35, no. 2, 1 Feb. 1996. Pages 278-282.

W) **Man L-C et al** article "Multi-frequency Interpolation for Fast Off-Resonance Correction" Magnetic Resonance in Medicine, Academic Press, Duluth, MN, US, vol. 37. no. 5. 1 May 1997 (1997-05-01) pages 785-792.

X) **Glover. G. H. et. al**. article "Three-point Dixon Technique for True Water/Fat Decomposition with B0 Inhomogeneity Correction" (Magnetic Resonance in Medicine, Academic Press, Duluth, MN. US. vol. 18. no. 2. 1 April 1991 1991-04-01 pages 371-383.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(703) 872-9306**.

Tiffany A. Fetzner

TAF
July 22, 2005

for Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800